



U.S. Fish & Wildlife Service

FY 05 Alpena FRO Accomplishment Summary

Aquatic Species Conservation and Management

The Fisheries Program maintains and implements a comprehensive set of tools and activities to conserve and manage self-sustaining populations of native fish and other aquatic resources. These tools and activities are linked to management and recovery plans that help achieve restoration and recovery goals, provide recreational benefits, and address Federal trust responsibilities. Sound science, effective partnerships, and careful planning and evaluation are integral to conservation and management efforts. The Alpena Fishery Resources Office in Alpena, Michigan is actively involved with aquatic species conservation and management in the Great Lakes. The accomplishments listed below highlight activities related to aquatic species conservation and management conducted in Fiscal Year 2005.

Lake Trout

Alpena FRO Completes 2004 Mid-lake Lake Trout Survey



*Submitted by Aaron Woldt
Fishery Biologist*

From October 26-28 and November 1-3, 2004 staff from the Alpena Fishery Resources Office (FRO) completed a mid-lake lake trout spawning survey on Six Fathom Bank and Yankee Reef. Service staff involved included Treaty Unit Coordinator Aaron Woldt, Fishery Biologist Adam Kowalski, and Fishery Biologist Scott Koproski. Due to scheduled repair work on the USFWS vessel *M/V Togue*, the 2004 survey was completed using the USGS vessel *R/V Grayling* and crew—Captain Ed Perry and Engineer Bill Boyle.

The goal of this survey is to collect abundance and biological data of spawning lake trout at index stations at two mid-lake reef complexes. The Service has stocked hundreds of thousands of lake trout yearlings on these 2 off-shore reefs in recent years. Three 400' long, large-mesh gill nets were set on Six Fathom Bank, and two 400' long, large-mesh nets were set on Yankee Reef. All lake trout collected were measured for length, weighed, checked for lamprey wounds, sexed,

assessed for maturity and visceral fat content, and sampled for ageing structures. Non-target fish species were worked up in a similar manner as well. The Alpena FRO has conducted the annual mid-lake lake trout spawning surveys on these reefs since 1993 with the *M/V Togue*.

In 2004, catch rates were down at the north and middle Six Fathom Bank sites and up at the south site compared to 2002 data. At Yankee Reef, catch rates were up slightly at the northern site and equal at the southern site compared to 2002 data. This survey was not conducted in 2003 due to inclement weather. In 2004, catch rates were above 100 spawners/1000 feet of net at the southern Six Fathom Bank Sites and both Yankee Reef sites. Catch rates were close to 100 spawners/1000 feet of net at the north and middle Six Fathom Bank sites. 50 spawners/1000 feet of net is the mean abundance of spawners needed to support a viable, naturally reproducing lake trout population at other sites in the Great Lakes. Also, the presence of unclipped, presumably wild fish at each of the 5 sites in 2004 is a positive sign of naturally produced recruitment.

Monitoring the abundance, stability, and quality of spawning lake trout populations on Six Fathom Bank and Yankee Reef is an important index of lake trout rehabilitation in Lake Huron. Six Fathom Bank and Yankee Reef were historically important lake trout spawning sites. This outcome is consistent with the Service's goal of maintaining self-sustaining populations of native fish species under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

Coded Wire Tag Extraction



*Submitted by Adam Kowalski
Fish and Wildlife Biologist*

During the month of October 2004, Fishery Biologist Adam Kowalski extracted and read coded-wire-tags (CWTs) from lake trout. CWTs are microscopic metal tags placed in the snouts of juvenile lake trout at the hatchery. Lake trout heads were collected during the spring fishery independent lake whitefish survey

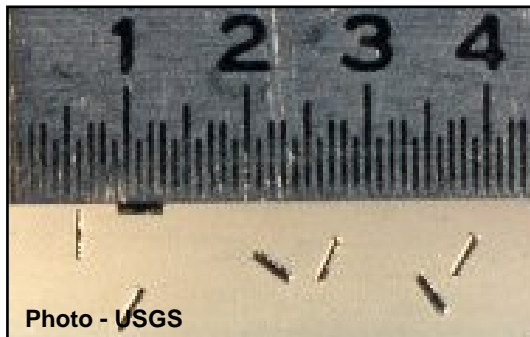
conducted by the Alpena FRO. Kowalski also extracted and read CWTs from sport-fishery caught lake trout heads collected by Michigan DNR creel clerks in Lake Huron.

CWTs are extracted by cutting lake trout snouts into smaller and smaller pieces until the tag can be seen and removed. CWTs are read under a microscope, and each tag's unique number is recorded. The tag number, when compared to stocking records, yields information such as stocking location, stocking date, fish age, fish strain, and hatchery of origin.

In total, Kowalski removed and read over 100 tags from approximately 125 heads. Not all adipose clipped lake trout contain CWTs, because some lake trout shed their tag and some are erroneously fin clipped. Additional lake trout heads will be received from Bay Mills Indian Community (BMIC), the Chippewa Ottawa Resource Authority (CORA), the Michigan DNR creel program, and the Alpena FRO fall surveys. These heads will be processed when received.

Data collected from lake trout CWTs are used to determine harvest limits, stocking locations, movement patterns, and post stocking survival rates of various hatchery practices. These outcomes are consistent with the Service's goal of building and maintaining self-sustaining populations of native fish species while providing recreational fishing opportunities and meeting the needs of tribal communities under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

2004 Coded-Wire-Tag Data Compiled



*Submitted by Aaron Woldt
Fishery Biologist*

In December 2004, Fishery Biologist Aaron Woldt compiled lake trout coded-wire-tag (CWT) data for submission to the common Lake Huron Technical Committee (LHTC) CWT database. The common database was created in 1999 and includes lake trout CWT return data from 5 partner agencies (Michigan DNR, Chippewa/Ottawa Resource Authority

(CORA), Ontario Ministry of Natural Resources, USGS Biological Resources Division (BRD), and the Service). CWTs are microscopic tags placed in the snouts of hatchery lake trout prior to stocking. Tags are extracted from lake trout at the time of harvest and yield information such as hatchery of origin, year planted, fish age, and fish strain. The Alpena FRO captures CWT lake trout in its fishery independent lake whitefish surveys and its mid-lake lake trout surveys. Recreationally caught CWT lake trout sampled by Michigan DNR creel clerks and head hunters are also processed by the Alpena FRO.

Woldt summarized all CWT returns processed by the Alpena FRO in 2004. CWTs were extracted and read by Fishery Biologists Adam Kowalski and Scott Koproski. Woldt formatted all data to conform to common database standards developed by the LHTC and forwarded Alpena FRO data to Scott Nelson of USGS BRD in Ann Arbor for inclusion in the common database. The common database is used by members of the LHTC to evaluate lake trout movement, strain survival, effects of quality at release on survival, and effectiveness of the northern and mid-lake refuges.

Biologist Woldt will use the LHTC common database to update his analysis of Lake Huron lake trout movement for oral and written presentation at the 2005 Winter LHTC Meeting and the 2005 Upper Lakes Meeting. Movement results will also be used to update lake trout catch-at-age models used to set harvest limits in 1836 Treaty waters.

Capturing, processing, and analyzing lake trout CWT returns directly supports lake trout rehabilitation and influences setting of safe harvest levels by allowing agencies to assess lake trout movement patterns, differences in strain survival, effects of hatchery practices, and effectiveness of refuges. These outcomes are consistent with the Service's goal of building and maintaining self-sustaining populations of native fish species while meeting the needs of tribal

communities under the “Aquatic Species Conservation and Management” priority of the Fisheries Program Vision for the Future.

Service Presents Results of Lake Huron Lake Trout Movement Study at LHTC Meeting

*Submitted by Aaron Woldt
Fishery Biologist*

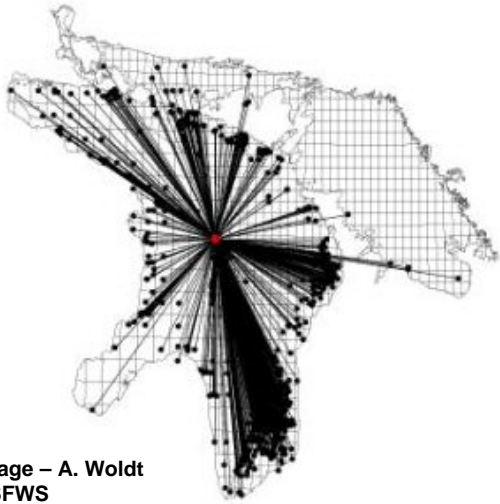


Image – A. Woldt
USFWS

Fishery Biologist Aaron Woldt and Project Leader Jerry McClain of the Alpena FRO attended the winter Lake Huron Technical Committee (LHTC) meeting from January 18-20, 2005 in Sarnia, Ontario. Woldt presented results from the Lake Huron lake trout movement study, which compared coded-wire-tag (CWT) returns of lake trout yearlings stocked at 8 discrete movement sites across the lake. For this study, four year classes of lake trout (1991, 1993, 1995, 1997) were planted at Adams Point in MH-1, Middle Island in MH-2, Sturgeon Point in MH-3, and Point Au Barques in MH-4. Three additional year classes (2001, 2002,

2003) were subsequently stocked at each of the four original sites and a new site off Point Clark in Canadian waters. Another year class (2004) will be planted at each of these sites in 2005 as well. CWT lake trout have been stocked annually in the Drummond Island Refuge in MH-1 since 1985 and in the mid-lake Six Fathom Bank Refuge from 1985 to 1998. Two year classes (1999, 2000) of CWT lake trout were also planted on Yankee Reef (mid-lake).

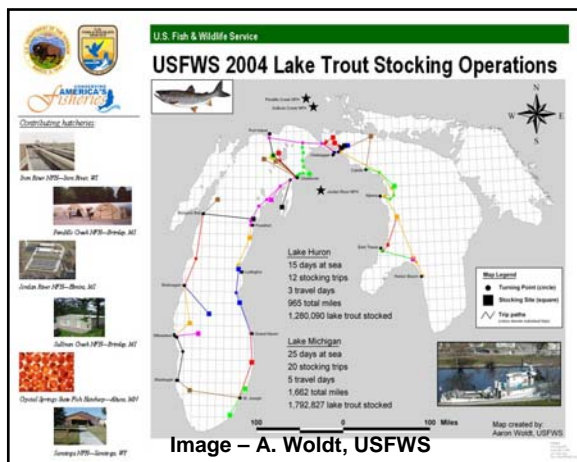
Over the course of the study, there have been 1,276 returns of Adams Point fish, 1,076 returns of Middle Island fish, 1,088 returns of Sturgeon Point fish, 1,275 returns of Point Au Barques fish, 5,049 returns of Drummond Island fish, 5,443 returns of Six Fathom Bank fish, 68 returns of Yankee Reef fish, and 0 returns of Point Clark fish in agency surveys, commercial fishing gear, and the recreational fisheries (all gears combined). Woldt adjusted returns in survey gill nets and large mesh commercial gill nets for effort and estimated dispersal radii with standard errors and directions for the 4 nearshore stocking sites. Analysis of CWT returns in the refuge and mid-lake sites is incomplete at this time. On average, lake trout ranged 21.8 ± 1.4 mi from Adams Point, 27.6 ± 1.8 mi from Middle Island, 32.3 ± 2.2 mi from Sturgeon Point, and 24.0 ± 2.9 mi from Point Au Barques. There was little variation in average distance moved by year at each site. In general lake trout moved large distances at early ages with some fish moving 100 miles or more by age 2. Only fish from Adams Point (increasing) and Point Au Barques (decreasing) showed statistically significant trends in distance moved by fish age.

Ongoing analyses includes fitting returns per effort at each site using an exponential sigmoid model to estimate lake trout home range, completing effort adjustments for the refuge and mid-lake sites, comparing movement patterns by strain for the Drummond Island and Six Fathom Bank sites, and a deeper analysis of differential movement by year class at each site. A

manuscript summarizing the results of the Lake Huron Lake Trout Movement study will be prepared when all analyses are complete.

Analyzing lake trout movement patterns allows managers to better delineate management units, better model lake trout population dynamics, and calculate safe harvest levels especially in 1836 Treaty waters. These outcomes are consistent with the Service's goal of building and maintaining self-sustaining populations of native fish species while meeting the needs of tribal communities under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

Service Maps 2004 Stocking Trips of M/V Togue



*Submitted by Aaron Woldt
Fishery Biologist*

At the request of Assistant Regional Director Gerry Jackson and Jordan River NFH manager Rick Westerhof, Fishery Biologist Aaron Woldt of the Alpena FRO created a GIS based map of stocking trips made by the M/V Togue in 2004. The M/V Togue, based in Cheboygan, MI, is the Service's offshore stocking vessel used to plant yearling lake trout in US waters of lakes Huron and Michigan in support of interagency lake trout rehabilitation programs.

Biologist Woldt worked with Boat Captain Mike Perry to obtain coordinates for all waypoints and lake trout stocking locations used by the M/V Togue in both lakes Huron and Michigan. Woldt, working with Jordan River NFH Biologist Tim Smigielski, created a map showing M/V Togue trip paths, waypoints, stocking locations, total miles traveled, and total number of lake trout stocked in lakes Huron and Michigan. In 2004, the M/V Togue traveled 965 miles in Lake Huron stocking 1,280,090 yearling lake trout and 1,662 miles in Lake Michigan while planting 1,792,827 yearling lake trout. Woldt formatted a poster sized electronic version of this map on the Region 3 poster template and forwarded it to the Regional Office for printing. This map will be used by Region 3 personnel to educate public and Service employees regarding M/V Togue operations and will be displayed at the 2005 Upper Lakes Meeting. A PowerPoint presentation showing trip by trip stocking operations was also prepared by Woldt and Smigielski and is available for use at outreach events.

This map of 2004 M/V Togue stocking trips will allow the Service to educate public and employees regarding the critical role the Service plays in lake trout rehabilitation efforts. This outcome is consistent with the Service's goal of implementing educational and outreach activities to educate public regarding Service activities under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

Lake Sturgeon

Ultrasonic Transmitter Recovered from Lake Sturgeon



*Submitted by James Boase
Fishery Biologist*

Alpena FRO Fishery Biologist James Boase worked with Bruce Manny (USGS Great Lakes Science Center in Ann Arbor, MI), Mike Thomas (Michigan DNR Lake St. Clair Research Station in Mt. Clemens, MI), and Purdy Fisheries Ltd. (Point Edward, ON) to continue to collect information from lake sturgeon captured in the Upper St. Clair River near Port Huron, Michigan. The initial focus of the research was to identify habitats used by lake sturgeon during spawning and where the fish move post spawning. In the study adult lake sturgeon were implanted with ultrasonic transmitters and followed using underwater listening gear. In 2002 eight fish were implanted and in 2004 six more fish were implanted. Of the 14 fish implanted ten moved out into Lake Huron following the spring spawning period.

Photo – J. Boase, USFWS

In addition to each fish having a transmitter, all of the fish are marked with an external Floy tag and an internal PIT tag. The purpose of the tags is to allow the fish to be identified if captured by a commercial or recreational angler. The Floy tag provides a number to identify the individual fish along with a phone number to contact the Alpena office. PIT tags provide a unique number but no contact information. It is injected under the skin of the fish and can only be read by an electronic reader.

In November 2004 Purdy Fisheries captured one of the lake sturgeon implanted in 2002. Having noticed the Floy tag they decided to bring the fish back to their facility at Point Edward, ON and contact Alpena FRO. Personnel from Alpena FRO were dispatched to the facility to collect information about the fish. The fish was healthy having gained a few pounds and grown a few inches since its release in the spring of 2002. Following its initial capture and implanting of a transmitter in 2002 that particular sturgeon was released and, following the spawning period in the spring of 2002, moved out into Lake Huron. Since that time the fish was not relocated until November 2004. Pictures were taken of the surgery area, biological information was collected to determine growth, and the ultrasonic transmitter was removed.

This effort is just one example of the Service working with states, other federal agencies, and non-government organizations to achieve common Great Lakes management objectives. Maintaining these collaborative relationships allows for the most efficient use of limited human and fiscal resources, ultimately resulting in faster restoration of lake sturgeon in the Great Lakes. This project addresses the “Aquatic Species Conservation and Management” and “Partnerships and Accountability” components of the Service’s Fishery Program Vision for the Future.

Research Ready to Continue at the Lake Sturgeon Spawning Reef on the Detroit River



*Submitted by James Boase
Fishery Biologist*

Following a year of delays, post construction evaluation is set to commence on the Detroit River at the site of an artificial lake sturgeon spawning reef. Researchers from Alpena FRO and USGS Great Lakes Science Center initiated pre-construction assessment at the proposed site in the spring of 2003. The goal at that time was to document fish use of the site to evaluate efficacy of placement of artificial substrate in this system. Construction of the reef was delayed first by funding and contracting issues in the fall of 2003 and then by weather conditions in the spring of 2004. By July of 2004 construction of the reef was

completed but unfortunately was completed too late to assess lake sturgeon spawning in 2004.

The reef is located at the northeast end of Belle Isle and is actually a series of three reefs close to one another. Each reef is composed of different substrate materials, one being crushed limestone, another made of field stone, and a third of coal cinders. All three materials have been successfully used as lake sturgeon spawning habitat at other locations around the Great Lakes.

Assessment methods used in 2003 included large mesh gillnets and baited setlines for lake sturgeon, egg mats for the collection of fish eggs, and experimental gillnets and baited minnow traps for other fish species. Results revealed that the area was not being used by lake sturgeon and only a few potential egg predators (crayfish, madtoms, rockbass, and round goby) were captured at the site. Eggs that were captured on the egg mats were taken back to the USGS lab in Ann Arbor which when reared to fry size revealed that they were walleye. Although researchers had suspected that walleye were using the Detroit River for spawning it, was not documented until that time.

The same assessment methods used in 2003 were again employed in 2005, with the primary objective of documenting fish use, more specifically lake sturgeon use of the spawning reef. During the first two weeks of sampling spawning ready male and female walleye were captured in gillnets and presumably walleye eggs were collected from the egg mats. As water temperatures increase over the next few weeks we expect to begin capturing spawning ready lake sturgeon at or near the reefs. If sexually mature lake sturgeon are captured we will be implanting the fish with ultrasonic transmitters and then follow them over the next three years. Information gained from this work will provide insight about the origin of the lake sturgeon using the newly constructed reefs and the home range of those individual fish.

Resources from both the Service and the USGS were pooled to efficiently monitor this site. Major contributors for this project include; Michigan Sea Grant, EPA, US Army Corps of Engineers, Great Lakes Fishery Trust, Michigan DNR, City of Detroit, and Detroit Edison. If successful this project will not only be the first artificial spawning reef constructed in the Great

Lakes specifically for lake sturgeon, but will also serve as a demonstration of a partnership effort working for the common good of a listed species.

This effort provided a unique opportunity to create new partnerships with both governmental and non-governmental agencies to achieve common Great Lakes management objectives. Maintaining these collaborative relationships allows for the most efficient use of limited human and fiscal resources. This project is consistent with the “Partnerships and Accountability”, “Aquatic Species Conservation and Management”, and “Leadership in Science and Technology” focus areas of the Fisheries Program’s Vision for the Future.

Saginaw River Watershed Lake Sturgeon Project

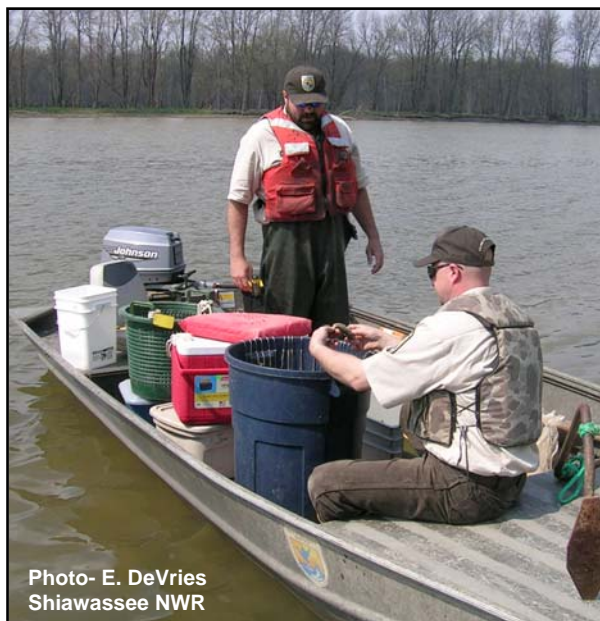


Photo- E. DeVries
Shiawassee NWR

*Submitted by Scott Koproski
Fishery Biologist*

During the month of April 2005, Fishery Biologists Scott Koproski, Adam Kowalski, James Boase, Aaron Woldt, Susan Wells and Project Leader Jerry McClain conducted a lake sturgeon project in the Saginaw River watershed. Steve Kahl, Ed DeVries, and Jim Dastyck from the Shiawassee National Wildlife Refuge also participated in this project and provided invaluable help. This project is funded through the Saginaw Bay Watershed Initiative Network (WIN) and the National Fish and Wildlife Foundation (NFWF). Anecdotal evidence suggests that lake sturgeon use the Saginaw River watershed during the spring spawning season, but very little is known about

the importance of this watershed to the lake sturgeon population of Lake Huron. The goal of this project is to document lake sturgeon use of the Saginaw River system. Partners involved with this project include the Michigan DNR, DOW Chemical, the city of Frankenmuth, WIN, and the friends group “Friends of the Shiawassee.”

Beginning on April 11, Alpena FRO staff deployed and retrieved egg mats and set lines in an attempt to document lake sturgeon usage of this watershed. Twenty four egg mats were deployed on the Cass River at the Frankenmuth dam, and 48 egg mats were deployed on the Tittabawassee River below the DOW dam. Two set lines were fished at the confluence of the Saginaw and Tittabawassee rivers, and one set line was fished at the confluence of the Saginaw and Cass rivers. Egg mats were checked weekly, and set lines were fished daily. Upon retrieval, Alpena FRO staff examined the egg mats for the presence of lake sturgeon eggs. No lake sturgeon eggs were found in the month of April, but non-target species (suckers, walleye) had deposited eggs on the mats. In April, no sub-adult or adult lake sturgeon were caught using the set lines either, but a few non-target species were caught. Egg mats and set lines will be deployed in May until water temperatures consistently rise above 16 ° C.

This project will continue in 2006 and 2007. By 2007 the Alpena FRO should be able to determine if lake sturgeon indeed occupy and use the Saginaw River watershed for spawning purposes. This project is an example of the Alpena FRO's commitment to the following Fisheries Vision Priorities: "Partnerships and Accountability" and "Aquatic Species Conservation and Management".

Saginaw Watershed Lake Sturgeon Project



Photo- E. DeVries
Shiawassee NWR

*Submitted by Scott Koproski
Fishery Biologist*

During the month of May 2005, Fishery Biologists Scott Koproski, Adam Kowalski, Aaron Woldt, Susan Wells, James Boase and Project Leader Jerry McClain completed the lake sturgeon project in the Saginaw Watershed. The project is funded through the National Fish and Wildlife Foundation (NFWF) and the Saginaw Bay Watershed Initiative Network (WIN). Anecdotal evidence suggests that lake sturgeon use the Saginaw watershed but very little is known about importance of this watershed to the lake sturgeon population within Lake Huron.

This project required a lot of coordination and cooperation by many groups and individuals. Partners on this project include Michigan DNR, DOW Chemical, the city of Frankenmuth, WIN, the Shiawassee National Wildlife Refuge, and local volunteers.

Beginning in April, Fishery Biologists Scott Koproski, Adam Kowalski, James Boase, Aaron Woldt, and Project Leader Jerry McClain began deploying and retrieving egg mats and set lines in an attempt to document lake sturgeon usage of this watershed. The project concluded during the last week of May. Twenty four egg mats were deployed on the Cass River at the Frankenmuth dam and 48 egg mats were deployed on the Tittabawassee River at the DOW dam. In addition to the egg mats, two set lines were fished at the confluence of the Saginaw and Tittabawassee Rivers and one set line was fished at the confluence of the Saginaw and Cass River. Egg mats were checked weekly and set lines were fished daily. Alpena FRO staff examined the egg mats for the presence of lake sturgeon eggs when they were retrieved. No lake sturgeon eggs were found but non-target species had deposited eggs on the mats. No sub adult and adult lake sturgeon were caught using the set lines either but a few non-target species were caught. However, Kowalski and volunteer Larry Dinsmore witnessed an adult lake sturgeon below the DOW dam in Midland on May 19th. He was unable to net this fish but it did provide evidence that lake sturgeon are present within the system.

This project was funded for three years by the NFWF and WIN and will conclude in 2007. By that time Alpena FRO should be able to determine if the lake sturgeon spotted within the Saginaw watershed are actually utilizing this system for reproductive purposes or are just migrant fish that wander in the system periodically.

This project is another example of Alpena FRO's commitment to the following Fisheries Vision Priorities for "Partnerships and Accountability" and "Aquatic Species Conservation and Management".

2005 Study Results at the Lake Sturgeon Spawning Reef on the Detroit River



Photo – J. Allen, USGS

*Submitted by James Boase
Fishery Biologist*

Following a year of delays, post construction evaluation of the artificial lake sturgeon spawning reef on the Detroit River has been completed. Researchers from Alpena FRO and USGS Great Lakes Science Center (USGS GLSC) initiated pre-construction assessment at the proposed site in the spring of 2003. The goal at that time was to document fish use at the proposed site prior to placement of the reef material. Construction of the reef was delayed first by funding and contracting issues in the fall of 2003 and then by weather conditions in the spring of 2004. Reef construction was completed by July of 2004 but unfortunately was too late to assess lake sturgeon spawning during that year. Sampling in 2005 began on April 5 and ended on June 6.

Historical records indicate that lake sturgeon were abundant and spawned at many locations in the Detroit River. Changes in hydrology and loss of habitat following the construction of the navigation channels in the early 1900's are partially to blame for the low number of lake sturgeon remaining (historical views of construction can be found at the following link: [http://memory.loc.gov/cgi-bin/query/r?ammem/detr:@field\(SUBJ\)+@band\(Michigan--Livingstone+Channel+\)](http://memory.loc.gov/cgi-bin/query/r?ammem/detr:@field(SUBJ)+@band(Michigan--Livingstone+Channel+))). Research conducted by Alpena FRO and USGS had recently determined virtually no suitable lake sturgeon spawning habitat remained in the Detroit and what was remaining was located in a degraded portion of the river. One of the major goals of this demonstration effort was to provide suitable spawning habitat for lake sturgeon and to document lake sturgeon use of the reef. The reef that was constructed is located at the northeast end of Belle Isle and is actually a series of three reefs (Limestone, Cobble, and Coal Cinders).

Assessment methods used in 2003 and 2005 included large mesh gillnets and baited setlines for lake sturgeon, egg mats for the collection of fish eggs, and experimental gillnets and baited minnow traps for other fish species. Results from 2003 revealed that the area was not being used by lake sturgeon and only a few potential egg predators (crayfish, stonecat, rock bass, and round goby) were captured at the site. Eggs that were captured on the egg mats were taken back to the USGS lab in Ann Arbor which when reared to fry size revealed that they were walleye.

Although researchers for many years had suspected that walleye were using the Detroit River for spawning it, was not documented until that time.

In 2005 no lake sturgeon or lake sturgeon eggs were captured at or near the vicinity of the reef. Our results may be partially explained by the size of the reef in relationship to the Detroit River and the fact that very few lake sturgeon are found in the Detroit River. Our results did not come as a total surprise. Four years of fishing for lake sturgeon from 1999 through 2002 by Alpena FRO during the months of April - September, in an area know to be the "home area" resulted in the capture of only 86 fish. Because of the life history and general biology of the fish only half of those would be females and of those only a small percentage had reached an age of sexual maturity. Compounding this further is the fact that females generally spawn at a period of every 2 to 7 years. So for the entire 32 mile stretch of the Detroit River there are probably very few spawning lake sturgeon in any given year and the odds of finding reefs that cover an area measuring 8,000 square meters are low.

Fish use of the constructed reef by other species was much more promising. During the first two weeks of sampling spawning ready male and female walleye were captured in gillnets and walleye eggs were collected from the egg mats. During the peak of walleye spawning over 250 eggs per mat were collected. As water temperatures increase over the period of the study a total of 17 species were captured and of those eight species of fish spawned or were captured in a sexually mature condition (ripe and running with either eggs or sperm) on or near the reefs.

The findings in 2005 were not able to fully address our initial goal of providing substrate for lake sturgeon. Further research of the site needs to be preformed and is being planned for the next few years. Since this project began back in 2003 three other artificial reefs have been constructed in the Detroit River. Working with our partners from the USGS GLSC, Michigan Department of Natural Resources, Ontario Ministry of Natural Resources, Department of Fisheries and Oceans Canada, municipal governments in Michigan and Ontario, along with corporate sponsors we plan to assess these new locations over the next three years and our hope is that during that same time period that lake sturgeon will locate and begin using the Belle Isle reefs.

Resources from both the Service and USGS were pooled to efficiently monitor the Belle Isle reefs from 2003 - 2005. Our goal is to continue to collaborate with our partners on this site along with new locations found in the Detroit and St. Clair rivers. Major contributors for this project include; Michigan Sea Grant, USEPA, US Army Corps of Engineers, Great Lakes Fishery Trust, Michigan DNR, US FWS (Science Support Program), City of Detroit, and DTE Energy. If successful this project will not only be the first artificial spawning reef constructed in the Great Lakes specifically for lake sturgeon, but will also serve as a demonstration of a partnership effort working for the common good of a listed species.

This effort provided a unique opportunity to create new partnerships with both governmental and non-governmental agencies to achieve common Great Lakes management objectives. Maintaining these collaborative relationships allows for the most efficient use of limited human and fiscal resources. This project is consistent with the Partnerships and Accountability, Aquatic Species Conservation and Management, and Leadership in Science and Technology focus areas of the Fisheries Program's Vision for the Future.

Lake Whitefish

Lake Whitefish Tagging Station

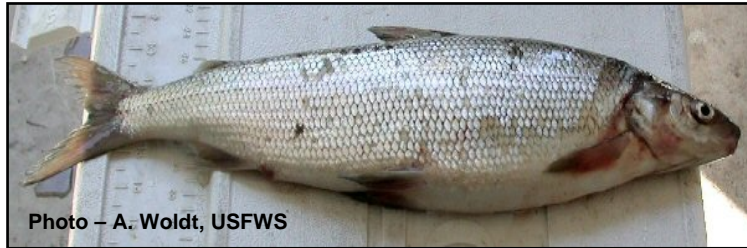


Photo – A. Woldt, USFWS

*Submitted by Scott Koproski
Fishery Biologist*

During the month of October 2004, Fishery Biologist Scott Koproski built tagging stations for a lake-wide, Lake Huron lake whitefish distribution study that starts in

November. This study is funded through the USFWS Restoration Act, and there are 7 partner agencies tagging whitefish at 8 locations throughout the basin. The objective of the study is to identify the distribution of different stocks of lake whitefish in Lake Huron. At each location 1,500-3,000 lake whitefish will be floy tagged, measured to the nearest mm, and scale sampled to obtain age estimates prior to release. The Alpena FRO is responsible for tagging 1,500 lake whitefish in the Thunder Bay area of Lake Huron.

Biologist Koproski built two identical tagging stations to expedite the tagging process. Each station has a built-in measuring board, a fish staging area, a smooth surface for data recorders to work, and a dry compartment for scale envelopes. Each tagging station is secured to a 100 gallon horse trough where fish will be held until they are processed. The stations also have an oxygen tank to provide fresh oxygen to fish held in the horse troughs to minimize stress.

In addition to the tagging stations, Biologist Koproski built a live-trap which will be secured to the side of the vessel while on the water. The live-trap will be used to obtain a measure of tag retention and post handling survival for a group of randomly selected tagged fish.

This is the first year of a 3-year, multi-agency lake whitefish distribution project. This study will provide managers with a better understanding of lake whitefish stock delineation and distribution within the basin. This project is an example of the Alpena FRO's commitment to the following Fisheries Vision Priorities: "Aquatic Species Conservation and Management", "Partnerships and Accountability", and "Cooperation with Native American Tribes".

Alpena FRO Tags Lake Whitefish

*Submitted by Aaron Woldt
Fishery Biologist*

From November 10 to 13, 2004 staff from the Alpena Fisheries Resource Office (FRO) participated in a USFWS Restoration Act funded Lake Huron lake whitefish distribution study. Service staff involved included Treaty Unit Coordinator Aaron Woldt, Project Leader Jerry McClain, Fishery Biologist Adam Kowalski, Fishery Biologist Scott Koproski, Fishery Biologist Anjie Bowen, and Fishery Biologist Susan Wells. Staff conducted all tagging operations on the commercial trap-net boat the *Blonnie W* operated by Jim Presau Fisheries.



Photo – A. Woldt, USFWS

The goals of this study are to determine the spatial distribution and movement patterns of 8 selected lake whitefish stocks in Lake Huron and to determine the contribution of each stock to commercial fishery yields. The 8 stocks selected for this study are Detour, Alpena (Middle Island & Thunder Bay), Saginaw Bay, Burnt Island, South Bay mouth, the Fishing Islands, Douglas Point, and Sarnia. From 2004 to 2006 1,500 lake whitefish will be tagged at each of the sites, except for Alpena and the Fishing Islands where 3,000 fish will be tagged

annually at each site. In all, 7 state, federal, tribal, and provincial partner agencies will be participating in this study.

Working in teams of 3, Service staff successfully Floy tagged and released 1,481 lake whitefish off Middle Island. Michigan DNR staff tagged approximately 1,500 fish in Thunder Bay in November. Tagged fish were measured for length, checked for lamprey wounds, sexed, assessed for maturity, scale sampled for ageing purposes, fin clipped, and released. A random subset of fish were also detained shortly prior to release to measure short term tag retention and handling mortality. Approximately 300 fish were lethally sampled and processed as well. Data from this study will be entered into a common database maintained by the Alpena FRO. Combined data will be distributed twice annually to study partners.

Studying the spatial distribution and movement patterns of lake whitefish stocks will allow managers to determine if the borders of current management units are biologically meaningful and to determine the contribution of each stock to the commercial fishery. This will allow for better harvest management and protection of lake whitefish stocks. This outcome is consistent with the Service's goal of maintaining self-sustaining populations of native fish species under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

2004 Lake Huron Lake Whitefish Distribution Study Data Compiled

*Submitted by Aaron Woldt
Fishery Biologist*

In April 2005, Fishery Biologist Aaron Woldt compiled lake whitefish tagging data from Service and partner agencies in a shared database as part of a USFWS Restoration Act funded Lake Huron lake whitefish distribution study. The goals of this study are to determine the spatial distribution and movement patterns of 8 selected lake whitefish stocks in Lake Huron and to determine the contribution of each stock to commercial fishery yields. The 8 stocks selected for this study are Detour, Alpena (Middle Island & Thunder Bay), Saginaw Bay, Burnt Island, South

Bay mouth, the Fishing Islands, Douglas Point, and Sarnia. Partner agencies for this study include the Service, Chippewa Ottawa Resource Authority, Michigan Department of Natural Resources, Bruce Power, Chippewas of Nawash, Saugeen First Nation, and Ontario Ministry of Natural Resources.

In the fall of 2004, over 12,000 lake whitefish were tagged by the 7 partner agencies across all sampling sites. Data was entered by each agency into a standard database designed by Woldt and sent to the Alpena FRO for inclusion in a central study database. Woldt provided each agency with data collection protocols and database formats prior to the study's start. Woldt has been working with agency data representatives to ensure data accuracy and timely entry. To date, data has been entered from 3 agencies. Once all data has been entered, Woldt will distribute copies of the central database to all partners. The full database is needed to accurately process tag returns and issue rewards. Each tag carries a \$5 US reward.

Serving as database manager for this study aids efforts to determine the spatial distribution and movement patterns of lake whitefish stocks and to determine the contribution of each stock to the commercial fishery. This will allow for better harvest management and protection of lake whitefish stocks. This outcome is consistent with the Service's goal of maintaining self-sustaining populations of native fish species under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

Aquatic Nuisance Species

Survey Conducted to Assess Goby Predation on Lake Trout



Photo – A. Woldt, USFWS

*Submitted by Anjanette Bowen
Fishery Biologist*

In October 2004, the Alpena FRO conducted a survey to assess predation of the invasive round goby on lake trout eggs on a historically important lake trout spawning reef in Thunder Bay, Lake Huron.

Round goby are an aquatic nuisance species that first invaded the Great Lakes in 1990 from the discharged ballast water of an ocean-going vessel. Native to Eurasia, the goby is an aggressive fish species that preys on fish eggs and fry and

competes with native species for food and habitat. The goby may threaten restoration efforts currently underway for lake trout in the Great Lakes. Goby have been found in near and offshore areas which contain reefs used by lake trout for spawning.

Alpena FRO initiated the study in 2002 to assess goby predation on lake trout eggs from a nearshore reef found in Thunder Bay and known to contain round goby. Set lines and trap lines have been used to collect goby. Over 130 goby were captured in October 2004. Their diet will be

examined to detect and quantify predation on lake trout eggs. This study was funded by the USEPA Great Lakes National Program Office. Aquatic nuisance species management addresses the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

Diet of Invasive Round Goby Examined for Eggs of Natives



*Submitted by Anjanette Bowen
Fishery Biologist*

In December 2004, Anjanette Bowen from the Alpena FRO examined the stomachs of 137 round goby captured from a nearshore historical lake trout spawning reef in northern Lake Huron. Round goby invaded northern Lake Huron in the late 1990s and have since become established and abundant in many areas of the lake. They are aggressive fish that

compete with native species for food and habitat. They are also known to feed on eggs.

This study, funded by the US EPA Great Lakes National Program Office (GLNPO), was designed to determine the relative abundance of round goby on a historical lake trout spawning reef through the seasons and identify whether they feed on lake trout eggs in the fall when the trout spawn. Examining potential impediments to lake trout rehabilitation in Lake Huron has been identified as a priority by the Lake Huron Committee. Major food groups were identified in the diet of round goby examined, as well as the presence/absence and number of lake trout eggs. Zebra mussels were a major dietary component of the goby examined. A final report on the three year study will be released in early 2005.

The restoration of lake trout and other native species relies on the control, management, and study of invasive species within the system where they co-habitate. This project addresses the "Aquatic Species Conservation and Management" component of the Fishery Program's Vision for the Future.

Removal Efforts Underway for Ruffe in Thunder Bay River, Lake Huron

*Submitted by Anjanette Bowen
Fishery Biologist*

Alpena FRO began removal efforts for spawning phase adult Eurasian ruffe (ruffe) in the Thunder Bay River in Alpena, MI on April 12, 2005. Ruffe are an aquatic nuisance fish species that are thought to compete with native species for food and habitat resources. Ruffe were first discovered in the Thunder Bay River in 1995 and it remains the only location where ruffe have



Photo – A. Bowen, USFWS

been found within the lake. They spawn in the spring at water temperatures 5-18 C. Spawning phase ruffe have been captured from the Thunder Bay River in past years.

The reduction effort was initiated in 2002 and has been conducted annually. Small mesh gillnets are used to remove adult spawning phase ruffe prior to release of sex products. Approximately 100 spawning phase ruffe were captured and removed in 2002 and a fraction of that number in 2003. No ruffe were captured in 2004 and efforts in 2005 will help

identify if ruffe are continuing to spawn and persist in the Thunder Bay area.

Management and control of aquatic nuisance species is necessary in order to protect, manage, and restore native species and their habitats. This project addresses the "Aquatic Species Conservation and Management" component of the Fisheries Vision for the Future.

Biologists Sample for Aquatic Nuisance Species



Photo – A. Bowen, USFWS

*Submitted by Adam Kowalski
Fish and Wildlife Biologist*

From September 26 to 28, 2005 Fishery Biologists Adam Kowalski and Scott Koproski completed bottom trawling for aquatic nuisance species in northern Lake Huron and the St. Mary's River. Surveillance for exotic species like Eurasian ruffe and round goby is conducted annually to locate newly established populations and monitor populations at existing sites. Kowalski and Koproski trawled 7 sites using the

RV Sentinel. Round goby were found in all the Lake Huron sites but not in any of the St. Mary's River sites. Ruffe were not found at any of the sites sampled. This is similar to the 2004 trawling results.

This project is designed to monitor exotic species populations and prevent their spread if possible. This is consistent with the U.S Fish and Wildlife Service Fisheries Program Vision for the Future to prevent new introductions of aquatic nuisance species.

Other Surveys

Mussel Surveys Completed on the St. Clair Delta at Walpole Island

Clair



*Submitted by James Boase
Fishery Biologist*

Working with biologists from Michigan Department of Natural Resources (MDNR), Environment Canada (EC), Walpole Island First Nation (WIFN), USGS Great Lakes Science Center, and Belle Isle Aquarium, Fishery Biologist James Boase conducted preliminary and follow-up native mussel surveys at multiple locations on the St. Clair River within the St. Clair River Delta. The research was undertaken to

identify refuge areas where native mussels can be managed and maintained. Since the introduction of the exotic zebra mussel in the 1980's native mussels have been steadily declining or have been eliminated from most areas of the Great Lakes. Although zebra mussels do not directly parasitize native mussels they do attach themselves in large numbers to the shells of the native mussels thereby preventing the mussels from foraging, reproducing and dispersing their progeny.

Historical research indicates that the highest densities and greatest diversity of native mussels were found in deeper locations in Lake St. Clair while shallow bays located in areas such as the St. Clair River Delta were considered marginal habitat. Today only the areas that were once considered marginal habitat have a surviving population of native mussels.

The St. Clair River Delta is the largest delta system in the Great Lakes forming an international border between the United States and Canada. The St. Clair River splits into three main channels along with multiple smaller channels as it moves through the delta. On the U.S. side the delta has been intensively managed and altered with both residential and commercial use dominating most upland areas. Steel sheet pilings separate most of the interface areas between upland areas and the river. Canals have been dredged connecting once isolated bays to most channels.

In Canadian waters, the Walpole Island First Nation has maintained most of the natural integrity of the delta. Most channels have native emergent plant species which slow the flow of water into them or act as buffers separating upland areas from the river. Numerous isolated bays having a limited access point from the river or from Lake St. Clair are still intact and have not been breached by man-made channels. Travel within the shallow water bays is restricted and is not impacted by heavy recreational boat traffic unlike most location on the U.S. side of the delta.

The differences in land use practices between the U.S. and Canadian waters of the delta may help partially explain why preliminary results indicate that native mussels are doing better in Canadian than in U.S. waters. Low boat traffic in isolated shallow bays results in less mussels being damaged by props or being dislodged. Bays that have not been breached by canals do not receive a continuous introduction of new zebra mussels, and as a result native mussels have few attached zebra mussels. In general most of the bays sampled on Walpole Island were relatively deeper than what was found on the U.S. side.

Researchers with EC and WIFN have taken some of the first steps by identifying refuge areas in Canadian waters and have been successful at moving native mussels from areas of high zebra infestation to those locations. What has not been determined is if all life history requirements will be fulfilled with those mussels that are placed in those refuge areas. Because most native mussels have specific host fish species needed for survival of their progeny the next question that needs to be answered is if the fish community has changed or if spatially the mussels will never be in contact with their host fish. If we are to maintain a population of native mussels some innovative and intensive approaches to management will have to be considered. Alpena FRO and its partners are planning to continue to identify other potential refuge areas in both U.S. and Canadian waters.

This joint research project provided an excellent opportunity to interact with biologists from other agencies and to explain the Service's mission and efforts to manage resources in the Great Lakes. Specifically, information was provided about the efforts of the Service and its partners to rehabilitate native mussel populations in the Great Lakes and the role that the Fishery Resources Offices have in this endeavor. This outreach event supports the Partnerships and Accountability and Aquatic Species Conservation and Management priorities of the Fisheries Program Vision for the Future.

Michigan Islands National Wildlife Refuge Survey



*Submitted by Scott Koproski
Fishery Biologist*

During the month of June 2005 Fishery Biologists Scott Koproski, Adam Kowalski, Susan Wells, and Anjanette Bowen began field work for a Michigan Islands National Wildlife Refuge fishery survey. Biologist Koproski received funding through the Service's Challenge Grant Program to obtain fishery data on islands located in Thunder Bay, Lake Huron. This is a cooperative project between the Michigan DNR and the Service.

Two of four islands that fishery data were collected from are components of the Michigan Islands NWR. However, all four islands are important to coastal fish species and recreational fishing opportunities in the Thunder Bay area. These islands provide important feeding, spawning, and nursery habitat to a variety of

fish species, but the status of these populations is unknown. The goal of this study is to obtain baseline data to monitor any trends in these populations and see what impacts disturbances like habitat alteration, exotic species, and cormorant predation might have on these populations in the future.

Alpena FRO staff attempted to set two to four 1,000 ft variable mesh gill net gangs on each of the four islands. We set a total of 6,000 ft of gill net, but our catch rates were quite low due to our nets filling up with algae. The algae clung to the gill net twine and collapsed the nets. The presence of algae has been a problem in the past, but the problem was more severe this year. As a result, the gill nets did not provide a representative sample of the fish species utilizing the islands. The project was postponed until late August in the hope that algae will be less abundant at that time of year.

This project is another example of Alpena FRO's commitment to the following Fishery Vision Priorities: Aquatic Species Conservation and Management, Public Use, and Partnerships and Accountability.

Michigan Islands National Wildlife Refuge Survey

*Submitted by Scott Koproski
Fishery Biologist*

During the month of August 2005, Fishery Biologists Scott Koproski, Jerry McClain, Susan Wells, Anjanette Bowen, Aaron Woldt, and Adam Kowalski completed a Michigan Islands National Wildlife Refuge fishery gill net survey. Biologist Koproski received funding through the Service's Challenge Grant Program to obtain fishery data on four islands located in Thunder Bay, Lake Huron. This is a cooperative project between the Michigan DNR and the Service. The Service sampled 3 islands, and MDNR sampled one island.

Two of the four islands sampled are part of the Michigan Islands NWR. However, all four islands are important to coastal fish species and recreational fishing opportunities in the Thunder Bay area. These islands provide important feeding, spawning, and nursery habitat for a variety of fish species, but the status of these populations is unknown. The goal of this study was to obtain baseline data to monitor future trends in these populations caused by disturbances like habitat alteration, exotic species, and cormorant predation.

Alpena FRO staff set two to four 1,000' variable mesh gill net gangs on each of three islands for a total of 8,000' of effort. This project was postponed from earlier in the field season due to the presence of algae in Thunder Bay which clung to the nets and reduced catch rates significantly. By August, the bay was algae free.

A variety of game and non-game fish were collected during the survey. The high number of fish species encountered illustrates the importance of the habitat provided by the Michigan Island Refuges in maintaining species diversity. All species encountered were measured to the nearest millimeter and weighed to the nearest gram. Additionally, aging structures were removed from game fish and stomach contents were recorded from all piscivores.

This project is another example of Alpena FRO's commitment to the following Fishery Vision Priorities: "Aquatic Species Conservation and Management", "Public Use", and "Partnerships and Accountability".

The **Alpena Fishery Resources Office (FRO)** is located in Alpena, Michigan and works to meet U.S. Fish and Wildlife Service Fishery and Ecosystem goals within Lake Huron, Western Lake Erie, and connecting waters of the St. Marys River, St. Clair River, and Detroit River. Activities include Aquatic Species Conservation and Management, Aquatic Habitat Conservation and Management, Cooperation with Native Americans, Leadership in Science and Technology, Partnerships and Accountability, Public Use, and Workforce Management – all of which are conducted in alignment with the Service Fisheries Program Vision for the Future. The station is one of many field offices located within Region 3, the Great Lakes Big Rivers Region.



**Alpena FRO Accomplishment Report
FY 2005**

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For more information on Alpena FRO programs and activities or to view other station reports visit our website located at
<http://www.fws.gov/midwest/alpena/>.